

Graphing Quadratic Functions

9. What is the maximum value of $y = -2x^2 + 4x + 3$?

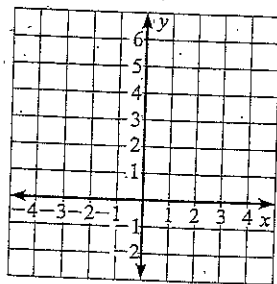
- A. $(-2, -13)$ B. $(-1, -3)$ C. $(1, 5)$ D. $(4, -12)$

20. A quadratic function is written as $y = (x + 3)(x - 2) - 2$.

a. Write the function in standard form.

b. What is the axis of symmetry on the graph of this function?

21. Sketch a graph of the function $y = -x^2 + 2x + 5$.



28. Factor the expression $x^2 - 3x - 54$.

29. What is the factored form of the expression $g^2 - 4$?

- A. $(g - 2)(g - 2)$ B. $(g - 2)(g + 2)$
C. $(g - 4)(g - 4)$ D. $(g - 4)(g + 4)$

30. The area of the rectangle with width $(x - 5)$ centimeters and length $(x + 9)$ centimeters is 32 square centimeters. What are the dimensions of the rectangle?

31. What are the zeros of the function $y = x^2 + 2x - 24$?

33. Solve the equation $12x^2 - 5x - 2 = 0$.

34. Which factorization of $6p^2 + p - 5$ is correct?

A. $(2p + 5)(3p - 1)$

B. $(2p + 1)(3p - 5)$

C. $(p + 5)(6p - 1)$

D. $(p + 1)(6p - 5)$

For Exercises 37–40, simplify the expression.

37. $\frac{4}{2 - \sqrt{5}}$

38. $\sqrt{75}$

39. $\sqrt{12} \cdot \sqrt{21}$

40. $\sqrt{\frac{5}{9}}$

41. What is the product of $6 - \sqrt{3}$ and its conjugate?

A. 33

B. 27

C. 9

D. 3

23. The graph of the function $y = 2(x - n)(x - 3)$ has its vertex at the point $(-2, -50)$. What is the value of n in this function?

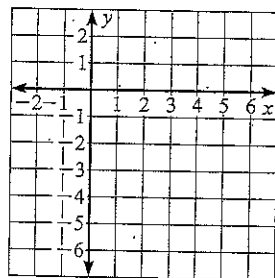
A. -7

B. -1

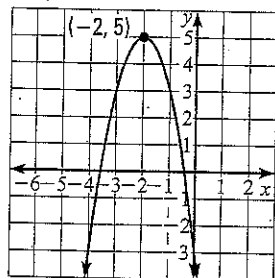
C. 1

D. 7

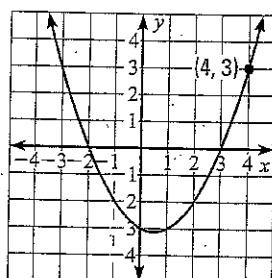
25. Graph $y = 2x^2 - 5x - 3$. Then solve the inequality $2x^2 - 5x - 3 \geq 0$ using your graph.



26. Write a quadratic function in vertex form for the parabola shown.



27. Write a quadratic function in intercept form for the parabola shown.



For Exercises 42–44, write the expression as a complex number in standard form.

42. $(7 + 2i) - (3 - 4i)$ 43. $5i(8 - 2i)$ 44. $(6 + i)(4 - 3i)$

50. Which equation has exactly one solution?

- A. $3x^2 + 5x + 7 = 0$ B. $3x^2 + 2x - 1 = 0$
C. $4x^2 + 10x - 5 = 0$ D. $4x^2 + 12x + 9 = 0$

51. The quadratic equation $ax^2 - 3x - 2 = 0$ has a discriminant of -7 . What is the value of a ?

- A. -2 B. -1 C. 1 D. 2

53. What are the solutions to the equation $x^2 - 2x + 3 = 0$?

- A. $x = 1 \pm \sqrt{2}$ B. $x = 1 \pm \sqrt{2}i$
C. $x = 3$ and $x = 1$ D. $x = -3$ and $x = 1$

54. Find the solutions to the quadratic equation $2x^2 + 4x - 3 = 0$.